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**EMPRESA BRASILEIRA DE COMPRESSORES S.A. - EMBRACO**  
Our ref.: P005271-PCT (ffi)

Dear Sirs,

In reply to the first written opinion mailed on June 14, 2004 together with the ISR, the applicant hereby wishes to file the following *informal comments* with respect to **item V** thereof.

**Items 2 - 2.2**

The applicant has amended claim 9, to include the limitations of claim 15. The remaining claims were renumbered.

Since the subject matter of claim 15 is considered to be new and inventive, the applicant considers that the amended claim 9 now recites patentable subject matter.

Page 3 of the specification was amended to reflect the changes made to the claims.

Atenciosamente,



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Agent for the applicant

Attachments .: Page 3 of the specification and page 12 and 13 of the claims

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cooling compressors.

Brief Description of the Invention

The objectives of the present invention are achieved by means of a sensor assembly, to measure the movements of a fluid pump, the fluid pump being actuated by an electric motor and the electric motor being connectable to a feed voltage, the sensor comprising an accelerometer that is electrically associated to a bias circuit, the accelerometer configuring first and second acceleration transducers, and comprising a feed terminal and a signal terminal, the feed terminal being electrically connectable to the motor feed voltage, and the signal terminal being electrically connectable to an external measuring circuit.

The objectives are also achieved by means of a fluid pump comprising a cylinder, a piston, a housing comprising a fluid-tight terminal hermetically enclosing the cylinder and the piston, thus forming a hermetic assembly, the piston being actuated by an electric motor, the electric motor being linked to an electric voltage by means of a pair of voltage terminals associated to the hermetic terminal, the fluid pump comprising a sensor assembly associated to the cylinder, the sensor assembly comprising a feed terminal and a signal terminal, the feed terminal being connectable to one of the voltage terminals and the signal terminal being electrically connectable to an external measuring circuit, the sensor assembly comprising a bias circuit associated to the accelerometer, the bias circuit being mounted in an internal portion of the housing.

The objectives of the present invention are further achieved by means of a cooler having a sensor assembly that measures movements of the fluid pump, the fluid pump being actuated by an electric motor and the electric motor being connectable to a feed voltage, the sensor assembly comprising an accelerometer and wherein the accelerometer is electrically associated to a bias circuit, wherein the latter comprises a feed terminal and a signal terminal, the feed terminal being electrically connectable to the feed voltage of the motor, and the signal terminal being electrically connectable to the external measuring circuit.

Brief Description of the Drawings

The present invention will now be described in greater detail with

connected to the measuring circuit (55).

7. A sensor assembly according to claim 6, characterized in that the bias circuit (51) comprises a transistor (51a) operatively associated to the signal terminal (33) and to the feed terminal (34).

5           8. A sensor assembly according to claim 7, characterized in that the external measuring circuit (55) comprises a microprocessor (52), the microprocessor (52) measuring the signal of the sensor assembly (1) by means of the signal terminal (33).

          9. A fluid pump (10) comprising:  
10           - a cylinder (58),  
          - a piston (57), and  
          - a housing (50) comprising a hermetic terminal (60) and hermetically enclosing the cylinder (58) and the piston (57), forming a hermetic assembly (100),

15           the piston (57) being driven by an electric motor (30), the electric motor (30) being connected to an electric voltage (V) by means of a pair of voltage terminals (61, 62) associated to the hermetic terminal (60),

          the fluid pump (10) being characterized by comprising a sensor assembly (1) associated to the cylinder (58), the sensor assembly (1) comprising a feed terminal (34) and a signal terminal (33), the feed terminal (34) being connected to one of the voltage terminals (61, 62) and the signal terminal (33) being electrically connectable to an external measuring circuit (55),

          the sensor assembly (1) comprising a bias circuit (51) associated to the accelerometer (2), the bias circuit (51) being mounted in an internal portion (50') of the housing (50).

          10. A fluid pump according to claim 9, characterized in that the sensor assembly (1) comprises an accelerometer (2) associated to a support means (3), the support means (3) being fixed to the hermetic assembly (100).

30           11. A fluid pump according to claim 10, characterized in that the sensor assembly (1) comprises a base portion (3a), the base portion (3a) being fixedly associable to the hermetic assembly (100).

12. A fluid pump according to claim 11, characterized in that the sensor assembly (1) comprises a weight (2a), connected to a first insulating element (20') and to a second insulating element (20''), first and second acceleration transducers (4a, 4b), a feed terminal (34) and a signal terminal (33) projecting from the first and second acceleration transducers (4a, 4b).

13. A fluid pump according to claim 12, characterized in that the first insulating element (20') is positioned on the surface (3a) of the support of the sensor assembly (1).

14. A fluid pump according to claim 13, characterized in that the first and second acceleration transducers (4a, 4b), the second insulating element (20'') and the weight (2a) are positioned overlapping the first insulating element (20').

15. A fluid pump according to claim 14, characterized in that the bias circuit (51) comprises a transistor (51a) operatively associated to the signal terminal (33) and to the feed terminal (34).

16. A fluid pump according to claim 15, characterized in that the external measuring circuit (55) comprises a microprocessor (52), the microprocessor (52) measuring the signal of the sensor assembly (1) by means of the signal terminal (33).

17. A fluid pump according to claim 16, characterized in that the housing (50) comprises a hermetic terminal (60) for passage of the feed terminal (34) and signal terminal (33).

18. A cooler characterized by comprising a sensor assembly (1), as defined in claims 1 to 9.